

Supporting Content Web Sites

PBS Evolution

<http://www.pbs.org/wgbh/evolution/>

This site correlates with The Evolution Project, the PBS series that provides a comprehensive look at the processes of biological evolution. The site contains extensive resources and web links for teachers and students.

B-5.1, 5.1, 5.3, 5.4, 5.5, 5.6, 5.7

ENSI/SENSI

<http://www.indiana.edu/~ensiweb/>

This site is dedicated to improving the teaching of biological evolution. Resources include lessons, simulations, webquests, etc. and links to other web resources.

B-5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7

Action Bioscience-American Institute of Biological Sciences

<http://www.actionbioscience.org/index.html>

Action Bioscience promotes bioscience literacy by providing articles on current issues on a variety of topics. Click on any of the topics to find an exhaustive list of resource articles-there are ties to evolution in all of the topics. Some have lesson plans.

B-5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7

Life Has a History

<http://www.ucmp.berkeley.edu/education/explorations/tours/intro/Intro5to12/tour1nav.php>

This site provides teachers and students with an interactive experience on biodiversity. It is very user friendly and students cannot 'click' ahead to complete it.

B-5.7

Teaching About Evolution and the Nature of Science

<http://www.nap.edu/readingroom/books/evolution98/>

This is actually the online edition of the book by the same name. It was written for teachers, students and parents and contains articles and lessons that explain how evolution works and why biology teachers need to teach evolution and do so easily using an inquiry approach.

B-5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7

American Museum of Natural History

<http://www.amnh.org/education/resources/exhibitions/darwin/index.php>

This site for educators provides links to a variety of informational resources, simulations, and other tools for teaching evolution and biodiversity.

B-5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7

Understanding Evolution

<http://evolution.berkeley.edu/>

This site contains resources which provide teachers with information regarding the importance of teaching evolution, the evidences for evolution, and the history of evolutionary thought. It also helps teachers understand the misconceptions that the general public has concerning evolution.

B- 5.1, 5.4, 5.5, 5.7

Learning From the Fossil Record

<http://www.ucmp.berkeley.edu/fosrec/>

The resources at this site will help teachers understand the importance of the fossil record as evidence for biological evolution. There is a very detailed geologic time scale with links to each time period of the geological /biological history of the Earth and an abundance of information at each link.

B-5.5, 5.6

Early Theories of Evolution

<http://anthro.palomar.edu/evolve/default.htm>

This webpage covers pre-Darwinian theories, Darwin's natural selection, and evidence for evolution. The information would be beneficial for any teacher and there are links within the pages with videos and sound.

B-5.1, 5.5, 5-6, 5.7

Synthetic Theory of Evolution

<http://anthro.palomar.edu/synthetic/default.htm>

The web page covers the evolution of populations and includes resources for teaching how mutations, natural selection, population size, gene flow, genetic recombination, and mating preferences affect the evolution of populations.

B-5.1, 5.2, 5.3, 5.4

Suggested Literature

BSCS: The nature of science and the study of biological evolution. (2005). NSTA Press

ISBN: 1929614195

This book is designed as a text for use with high school students and incorporates Darwin's ideas of natural selection, evidence for evolution, and population genetics. It would make an excellent resource for a biology teacher as it contains a CD-ROM teacher's guide.

B-5.1, 5.2, 5.3, 5.4, 5.5, 5.6

Sacks, Oliver. (1997). *Island of the colorblind*. New York: Alfred A. Knopf

ISBN: 0679451145

Natural selection, small populations, no migration are a few of the factors that influence allele frequencies in a population. Sacks' book tell the true story and scientific though about an island population where the incidence of a rare form of colorblindness is very high.

B-5.1 5.2, 5.3, 5.4

Zimmer, Carl. (1999) *At the water's edge: Macroevolution and the transformation of life*. New York: Free Press
ISBN: 0684856239

This book explores the transition of vertebrates from an aquatic habitat and return of some vertebrates to the water. A good book on the natural history of vertebrates; excellent examples are provided.

B-5.1, 5.4, 5.5, 5.7

Zimmer, Carl. (2001). *Evolution-The triumph of an idea*. New York: HarperCollins
ISBN: 0060199067

The companion text to the PBS *Evolution* video series, this book is a comprehensive resource for understanding the complexities of modern evolutionary theory. It is very readable.

B-5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7

Gould, Stephen J. (1987). *The flamingo's smile: Reflections in natural history*.
ISBN: 0393303756

Lexile Level: 1370L

A collection of Gould's essays from *Natural History*, this book provides anyone with the basic ideas about evolution. Gould's easy writing style allows even the novice reader the chance to gain an understanding of evolution.

B-5.1, 5.2, 5.3, 5.4, 5.5

Gould, Stephen J. (1998). *The burgess shale and the nature of history*.
ISBN: 039330700X

This book is another collection of Gould's essays from *Natural History*. Easy to read and it provides anyone with more insight into biological evolution.

B-5.1, 5.2, 5.3, 5.4, 5.5

Teaching about evolution of the nature of science. (1998). National Academy Press
ISBN: 0309063647

This is the print edition of the book that is available online. It was written for teachers, students and parents and contains articles and lessons that explain how evolution works and why biology teachers need to teach evolution and do so easily using an inquiry approach.

B-5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7

Weiner, Jonathan. (1994). *The beak of the finch: A story of evolution in our time*. New York: Knopf Publishing Group
ISBN:067973337X

Weiner chronicles the twenty year research project of Rosemary and Peter Grant. Their observations of the beaks of the Galapagos finches on Daphne Island show evolution happening in real time.

B-5.1, 5.4, 5.5

Whitfield, Philip (1993). *From so simple a beginning: The book of evolution*. New York: Macmillan
ISBN: 0020383045

This book uses evidence for genetics, the fossil record, and geology to explain evolution. Written with the nonscientists in mind, the book is a great introduction to evolution.
B-5.2, 5.3, 5.4, 5.5

Palumbi, Stephen R. (2001). *The evolution explosion-How human cause rapid evolutionary change*.
ISBN: 0393323382

Palumbi discusses why evolution is so important in our everyday life. The reason for the rapid pace of evolutionary change due to human behaviors is explained in language for the general reader.
B-5.1, 5.2, 5.5

Suggested ETV Streamline SC or ITV Video Resources

Biologix: Gene Frequencies, Natural Selection, and Speciation
ETV Streamline SC

This video analyzes how factors such as genetic drift, gene flow, mutation and random mating lead to changes in the gene pool. Included in the video are talks with world renowned paleontologist Desmond Collins about how natural selection and speciation might have occurred. Viewers take a journey to the Burgess Shale.
29:00
B-5.1, 5.2, 5.3, 5.4

Biologix: Meiosis and Gamete Formation
ETV Streamline SC

The role that meiosis plays in both the continuity of chromosome number and the genetic variation with a species is highlighted in these video segments. How crossing over and nondisjunction increase diversity within a species is also covered.
Nondisjunction 16:32-20:22; How Humans Apply Knowledge of Meiosis to Agriculture: Condition of Polyploidy in Plants 20:22-20:46; Increasing Genetic Variability in Species: Crossing-over in Meiosis 20:46-23:06; Sexual Reproduction: Producing Variability in Species 23:05-25:06
B-5.2, 5.3, 5.4

Greatest Discoveries with Bill Nye: The Origin and Evolution of Life
ETV Streamline SC

The segments listed here examine the Burgess Shale fossils, classification, and Darwin's theory about natural selection.
The Burgess Shale 44:18-50:11; Classification 50:12-52:21; Natural Selection 52:22-59:09
B-5.1, 5.5, 5.7

Great Books: The Origin of Species

ETV Streamline SC

Darwin's theory of natural selection is at the center of attention. The video segments here discuss several key points of Darwin's ideas.

Why Are There So Many Species? 00:00-02:10

Darwin Studies Two Types of Evolution: Economic and Natural Selection 13:39-16:49;

Darwin Develops a Non-Random Theory of Evolution: Natural Selection and Adaptation

16:50-21:10; Living with Darwin's Principles: Natural Resistance 25:43-30:11

B-5.1

Life Science- Evolution

ETV Streamline SC

The four segments here cover the evolution of the elephant, Darwin's natural selection theory and fossil hunting on the Galapagos Islands.

Elephant Evolution 5:10-9:09; Charles Darwin 9:10-13:49; The Galapagos Islands 13:50-20:48;

Fossil Hunting on the Galapagos Islands 20:49-24:46

B-5.1, 5.5, 5.7

Biomes: Islands and Evolution

ETV Streamline SC

Geographic isolation leads island species to diverge from their mainland ancestors. This video (14 segments) shows how geographic isolation can cause new species to evolve.

56:00

B-5.1, 5.4, 5.5, 5.7

Biology: Science of Life-Molecules and Evolution

ETV Streamline SC

This video explores the changes made at the molecular level of life that results in evolution.

20:00

B-5.1, 5.5

Elements of Biology: Biological Evolution

ITV

This lesson from the Elements of Biology covers the basic concepts of biological evolution.

Lesson One- Biological Evolution 20:00

B-5.1, 5.3, 5.4, 5.5

Domains of Life

ITV

Lesson one covers the new idea of the domain hierarchy above the kingdom taxonomic level.

The hypothesis that the eukaryotes and the most ancient prokaryotes (Archea) have more in common than the Archea have with the other prokaryotes is explored in this video lesson.

Lesson One- Life's Three Great Branches 00:00- 12:26

B-5.5, 5.7

Life on Earth

ITV

This twenty-seven part series (average 25 minutes each segment) covers the complete spectrum of the diversity of life on earth. From the most ancient bacteria to the rise mammals, this series provides amazing cinematography and is narrated by David Attenborough.

11:00:00

Career Connections**Research Scientist**

Research scientists work in a variety of academic, public and private settings. Some research scientists specifically work on advancing the knowledge about evolution by studying the DNA of different species, while other researchers work on developing new antibiotics for treating pathogens that have developed resistance to antibiotics or study organism adaptations, behaviors, and habitats to learn more about the relationships and diversities that exist among life on earth.

Wildlife Biologist

A wildlife biologist might have degrees in biology, ecology, evolution, forestry or agriculture. Many wildlife biologists work for public or governmental agencies. Their jobs involve providing scientific understanding of how organisms interact and the affects of these interactions on the environment and on the other organisms in the environment. They also study the problems caused by human intervention in the environmental setting.

Evolutionary Biologist

Evolutionary biologists typically work in a college academic setting teaching college students courses in biology, evolution, and ecology. Evolutionary biologists do research and develop models to help explain how populations and species change over time. They often collaborate with paleontologists and geologists as well as other science experts to support their research.